

ABSTRACT OF THE DISCLOSURE

A process for all-optical multi-bus networking of two-fiber bidirectional buses with two-fiber bidirectional Bus-To-Bus Links for a method of shared mesh protected Point-To-Point, Point-To-Multipoint and Broadcast Networking with the steps of:

providing protected Bus-To-Bus service networking and Bus-To-Bus protection networking and in-service expansion with more buses, in place of networking with isolated rings connected through un-protected ring-to-ring connections,

providing capacity expansion by replacement of single Wavelength Division Multiplexed (WDM) optical signals in few, wide bandwidth WDM channels with a plurality of optical signals Dense Wavelength Division Multiplexed (DWDM) to each WDM channel, and switching few WDM optical channels with small size modular Switching Fabrics, in place of high startup-cost, high capacity DWDM systems switching many DWDM optical signals with expensive and unreliable large size Switching Fabrics,

providing the Add/Drop capability integrated with the Append/Drop-Continue capability, to Append more DWDM optical signals to a WDM channel already partially occupied by DWDM optical signals at non overlapping carrier frequencies, in place of requiring to Drop those signals before new ones could be Added,

providing optical switching capability integrated with selective broadcast capability of Added or arriving at the Bus or the Bus-To-Bus input terminals WDM channels in place of using external optical Power Couplers with reduced transmission reach,

providing one local, shared mesh protection with bus protection loops integrated with dedicated 1+1 Dual Bus Interworking protection to protect Bus Link failures, Bus-to-Bus Link failures, and Switching Fabrics and other equipment failures with

reserved as low as 25% of protection bandwidths, in place of ring protection with 50% of reserved protection bandwidth and un-protected ring-to-ring connections.